MILLER COUNTRY ESTATES, PWS #7100184
SOURCE WATER ASSESSMENT FINAL REPORT

June 25, 2004

State of Idaho
Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for Miller Country Estates, Ucon, Idaho*, describes the public drinking water system, the zone boundaries of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The Miller Country Estates drinking water system consists of two ground water sources serving approximately 40 people through 16 connections. In terms of the total susceptibility score, the North Well and the South Well rate high for IOCs, VOCs, SOCs, and microbial contaminants. The irrigated agricultural land uses that dominate the delineated area influence the scores significantly. The delineation crosses an organic priority area for the pesticide atrazine. The delineation also crosses a county that has been rated high for nitrogen fertilizer use, herbicide use, and total agricultural chemical use.

Water chemistry tests are routinely conducted on the Miller Country Estates drinking water system. Contaminants detected in the drinking water system include the regulated IOCs barium, lead, copper, and nitrate but at levels below the maximum contaminant levels (MCLs). Total coliform bacteria have been detected in the distribution system or at the wells in May 2001. No VOCs or SOCs have been detected in the wells.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Miller Country Estates, drinking water protection activities should focus on maintaining the requirements of the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Any spills from the potential contaminant sources listed in Table 1 of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Also, disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. Most of the designated areas are outside the direct jurisdiction of the Miller Country Estates making partnerships with state and local agencies and industry groups critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations, therefore the State Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). The Miller Country Estates has formed a drinking water protection planning team and is currently developing a drinking water protection plan with assistance from the Idaho Falls Regional Office of the Idaho Department of Environmental Quality and the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR MILLER COUNTRY ESTATES, UCON, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment areas and the inventory of significant potential sources of contamination identified within those areas are attached. The lists of significant potential contaminant source categories and their rankings, used to develop this assessment, are also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the EPA to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments for sources active prior to 1999 were completed by May of 2003. SWAs for sources activated post-1999 are being developed on a case-by-case basis. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The DEQ recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

Miller Country Estates, near Idaho Falls, Idaho serves a community of approximately 40 people through 16 connections. Miller Country Estates is located approximately five (5) miles north of Idaho Falls, near the town of Ucon (Figure 1). The public drinking water system for the Miller Country Estates is comprised of two ground water sour

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Defining the Zones of Contribution - Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ ascertained an approximation for the delineations using a refined computer model approved by the EPA to determine the capture zone delineations for the Miller Country Estates wells. The computer model used site-specific data, assimilated by DEQ from a variety of sources including local area well logs and hydrogeologic reports summarized below (from WGI, 2001).

The source wells are located in southeastern Idaho, approximately five miles north of the city of Idaho Falls. Ucon, Idaho is the closest town to the source wells located one mile to the northeast. The Snake River flows approximately 3 miles to the west of the source wells.

The topography of the study area is relatively flat, with ridges forming the perimeter boundaries of the valley. The elevation of the plain ranges from 4700 feet amsl to 4900 feet amsl. The surrounding ridges extend to over 5500 feet amsl. The area is an arid environment, receiving around ten inches of precipitation per year (Weatherbase, 2003).

The source wells are completed in basalt flows on the Eastern Snake River Plain (ESRP) in southeastern Idaho. The ESRP is a northeast trending basin that is over 10,000 square miles and primarily filled with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intermixed with terrestrial and lacustrine sedimentary deposits (WGI, 2001). The basalt flows are bound by granitic and rhyolitic uplands.

There are multiple surface water bodies that lie within the ESRP. The Snake River, the Henry's Fork River, the Teton River, and many smaller streams and canals dissect the plain. The Snake River is most important surface water body to this system due to the proximity of the river to the wells. The river stage elevation is significantly higher than the water level elevations in the wells, indicating the ground water and the Snake River are hydraulically disconnected through this stretch of the river. The importance of the river to this system lies in the recharge the river supplies to the deeper aquifers.

Model Description

The capture zones for the source wells were modeled using the WhAEM Model 2000, version 1.0.4. The model was run by inputting hydrogeologic data estimated from well logs, topographic maps, geologic maps, and previous studies conducted in the area. Boundary conditions and initial aquifer property estimates were inputted into the model and then ran over a series of simulations. Parameters were adjusted in these simulations until a "best fit" approximation was achieved.

Boundary conditions inputted into the model were based on previous modeling efforts conducted in this area. The regional aquifer flowing through this area has been modeled previously, and parameters used in the previous model were incorporated into this model. The boundaries incorporated from the previous model include the constant head boundaries and a constant flux boundary. Other boundaries used in the previous model were not included into this model.

To simulate the general ground water flow direction of the regional system, constant head boundaries were placed on the northern and southern portions of the study area. The head values assigned to these boundaries were 4900 feet above mean sea lvel (amsl) along the northern extent and 4440 amsl to the south, generating a southwestern flow direction.

Another boundary incorporated from the previous model was a constant flux boundary along the eastern portion of the model. This boundary was designed to simulate recharge occurring from underflow of adjacent aquifer systems. The flux value assigned to this boundary was –2.9 ft^2/day.

A boundary condition not incorporated into this model was the constant flux/head boundary placed on the Snake River. Due to the depths of the wells and the water levels within the wells, the Snake River does not appear to be in direct hydraulic connection with the ground water. Therefore, the Snake River was not included in the model as a boundary condition. The presence of this boundary was investigated through the modeling process, but due to unrealistic capture zone delineations, the boundary was not incorporated into the "best fit" scenario of the model.

Finally, a no-flow boundary was arbitrarily placed around the study area to define the extent of the model. The presence of this boundary limits the area required to be calculated by the model.

Once the initial boundary conditions and aquifer parameters were inputted into the model, the model was ran over a series of simulations until a "best fit" scenario was achieved. The "best fit" scenario was defined by the closeness of test point matches. The test points are wells in the area completed in the same aquifer. Water levels taken from the well logs of these test points are compared to the head values predicted by the model. Model parameters are adjusted until the calculated values best match the measured values, resulting in the "best fit" scenario.
The parameters entered into the model for the "best fit" scenarios are:

Aquifer base elevation (ft amsl):	4200
Aquifer thickness (ft):	200
Hydraulic conductivity (ft/day):	450
Recharge (ft/yr):	0.0046
Porosity:	0.15

The aquifer base elevation, thickness, recharge, and porosity were all estimated from the previous model ran in this area (WGI, 2001). The hydraulic conductivity was adjusted until the best test point match was achieved. The hydraulic conductivity for the basalt aquifer ranges from 25 to 1700 ft/day (WGI, 2001). Extreme ranges of hydraulic conductivity (50 to 1700 ft/day) were entered into the model to determine the best approximation for these particular wells. Based on the test point matches, the hydraulic conductivity value that created the best test point match was 450 ft/day.

The range in error associated with the test point match can be attributed to the estimating procedure involved in locating and assigned head values to the test points. The head values for the test points were taken from the well logs and approximated using a topographic map. The topographic map was used to estimate locations and elevations of the wells, resulting in potential measurement error. Therefore, test point matches within +/- 50 feet are considered adequate.

The pumping rates entered into the model for the source wells was 225 gallons per minute (gpm). The reported pumping rate for the wells was 150 gpm. The increase in modeled pumping rates is done as a factor of safety. This increased pumping rate incorporates any potential measurement errors in the reported rate as well as considers the potential of the system to increase production in the future.

The delineated capture zone presented in this report is an estimate of the model runs conducted. The delineation is a composite of the capture zones for both wells, incorporating all of the model runs into the final delineation. This delineation is based on existing information and fundamental assumptions required to run the model, so should be treated as an estimate. There is potential for this capture zone to become modified as more information becomes available. The actual data used by DEQ in determining the source water assessment delineation areas are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the Miller Country Estates ground water delineated area consists predominantly of irrigated agricultural land and rural residential homes.

It is important to understand that a release may never occur from a potential source of contamination, provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A contaminant inventory was conducted for the Miller Country Estates system in Spring 2004. The process involved identifying and documenting potential contaminant sources within the Miller Country Estates Source Water Assessment Area through the use of computer databases and Geographic Information System maps developed by DEQ. A second, or enhanced, inventory was completed by the operator of the system.

Since the two ground water wells share the same delineation, the two wells also share the same potential contaminant inventory. Multiple underground storage tank (UST) sites are identified along with general contractors, dairies, a landfill, a sand and gravel pit, and a site covered by the Superfund Amendments and Reauthorization Act (SARA). The enhanced inventory added a vehicle salvage business and closed gravel pit(s) being used by off road vehicles that could leak fluids (Table 1, Figure 2). Numerous canals and Highway 20 cross the delineation. If a release occurred in one of these corridors, the potential for contamination is raised.

Table 1. Miller Country Estates Potential Contaminant Inventory

Map ID	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1, 5	UST – Truck/Transporter, open	0-3	Database Search	VOC, SOC
2, 6	UST – Farm, open	0-3	Database Search	IOC, VOC, SOC, M
3, 19	UST – Other, closed; SARA site	0-3	Database Search	IOC, VOC, SOC
4	UST – Gas station, open	0-3	Database Search	VOC, SOC
7	UST – Farm, open	0-3	Database Search	IOC, VOC, SOC, M
8	UST – Gas station, open	0-3	Database Search	VOC, SOC
9	Dairy, 500-1000 cows	0-3	Database Search	IOC, M
10	Dairy, 500-1000 cows	0-3	Database Search	IOC, M
11	Roofing Contractor	0-3	Database Search	IOC, VOC, SOC
12	General Contractor	0-3	Database Search	IOC, VOC, SOC
13	Auto repair and service	0-3	Database Search	IOC, VOC, SOC
14	Concrete contractor	0-3	Database Search	IOC, VOC, SOC
15	Mobile Homes - Transportation	0-3	Database Search	IOC, VOC, SOC
16	Roofing Contractor	0-3	Database Search	IOC, VOC, SOC
17	Farm Equipment – Manufacturing	0-3	Database Search	IOC, VOC, SOC
18	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC, M
20	Municipal landfill	0-3	Database Search	IOC, VOC, SOC, M
21	Dairy, 500-1000 cows	3-6	Database Search	IOC, M
22	Vehicle salvage	0-3	Enhanced inventory	IOC, VOC, SOC
23	Gravel pit(s), closed	0-3	Enhanced inventory	IOC, VOC, SOC
	Highway 20	0-3	GIS Map	IOC, VOC, SOC, M
	Snake River	0-6	GIS Map	IOC, VOC, SOC, M
	Local canals	0-10	GIS Map	IOC, VOC, SOC, M

[1] UST = underground storage tank, SARA = Superfund Amendments and Reauthorization Act
[2] TOT = time-of-travel in years
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

Section 3. Susceptibility Analysis

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix B contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity rated high for both wells (see Table 2). In each case, the vadose zone is composed of gravel and fractured basalt. These materials, in general, do not decrease the downward movement as much as fine-grained materials. The depth to the first water is less than 300 feet, being 119 feet below ground surface (bgs) for the South well and 130 feet bgs for the north well at the time of drilling. The soils rate as moderate- to well-drained as defined by the Natural Resource Conservation Service. The available well logs do not show laterally extensive low permeability units.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

Both wells rated moderate susceptibility for system construction. The recent sanitary survey (D7HD, 2000) indicates that all of the wellhead and surface seals are maintained and that both of the wells are properly protected from surface flooding.

The North Well was drilled in July 1999 to a depth of 310 feet bgs into producing basalt. The static water level at the time of drilling was 130 feet bgs. The well used 0.250-inch thick, 8-inch diameter casing from two (2) feet above ground surface to 63 feet bgs into clay and 0.250-inch thick, 6-inch diameter casing from 40 feet bgs to 200 feet bgs into basaslt. The well installed a bentonite seal to 20 feet bgs into gravel and sediment, which is not a confining layer as required by DEQ (1999) to achieve a lower score.

The South Well was drilled in May 1998 to a depth of 175 feet bgs into fractured basalt. The static water level at the time of drilling was 119 feet bgs. The well used 0.250-inch thick, 8-inch diameter casing from one (1) foot above ground surface to 60 feet bgs into basalt and 4-inch diameter PVC casing from 20 feet bgs to 175 feet bgs into fractured basaslt. The screened interval is from 160 to 175 feet bgs. The well installed a bentonite seal to 20 feet bgs into compacted silt gravel, which is not a confining layer as required by DEQ (1999) to achieve a lower score.

Though the Miller Country Estates wells may have met construction standards at the time of their installation, current well construction standards are stricter. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter wells require a casing thickness of at least 0.280 inches and 8-inch diameter wells require a casing thickness of at least 0.322 inches. Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate.

Potential Contaminant Sources and Land Use

For the Miller Country Estates, both wells share the same delineation and rate high land use susceptibility for IOCs, VOCs, SOCs, and microbial contaminants. Agricultural land uses, the local canals, Highway 20, and numerous potential contaminant sources increased the score. In addition, the delineation crosses an organics priority area for the SOC atrazine. County wide nitrogen fertilizer use, county wide herbicide use, and county wide total agricultural chemical use are rated high for the area covered by the delineation.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Additionally, the storage or application of any potential contaminants within 50 feet of the wellhead will lead to an automatic high score. In this case, the North Well rates automatically high for VOC contamination due to the gravel access road that passes within 50 feet of the wellhead. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking.

Table 2. Summary of the Miller Country Estates, Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
Source		IOC	VOC	SOC	Microbes		IOC	VOC	SOC	Microbes
North Well	H	H	H	H	H	M	H	H(*)	H	H
South Well	H	H	H	H	H	M	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H(*) = well rates high and automatically high due to gravel road within 50 feet of the wellhead

Susceptibility Summary

In terms of total susceptibility, both wells rated high susceptibility to all potential contaminant categories (Table 2).

Water chemistry tests are routinely conducted on the Miller Country Estates drinking water system. Contaminants detected in the drinking water system include the regulated IOCs barium, lead, copper, and nitrate but at levels below the MCLs. Total coliform bacteria have been detected in the distribution system or at the wells in May 2001. No VOCs or SOCs have been detected in the wells. The delineation crosses an organic priority area for the SOC atrazine. The delineation is contained within a county rated as high for nitrogen fertilizer use, herbicide use, and agricultural chemical use.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Miller Country Estates, drinking water protection activities should focus on maintaining the requirements of the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Any spills from the potential contaminant sources listed in Table 1 of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Also, disinfection practices should be maintained if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. Any vehicles currently driven on the gravel road next to the North Well should be restricted from travel along that road. Most of the designated areas are outside the direct jurisdiction of the Miller Country Estates making partnerships with state and local agencies and industry groups critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations, therefore the State Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation

District, and the Natural Resources Conservation Service. Drinking water protection activities for mining should be coordinated with the appropriate state and/or federal agencies responsible for the regulation or cleanup of the mine. Depending on the nature and status of the mine, various agencies could include DEQ, the EPA, the Department of Lands, the Bureau of Land Management, the U.S. Forest Service, or others.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). The Miller Country Estates has formed a drinking water protection planning team and is currently developing a drinking water protection plan with assistance from the Idaho Falls Regional Office of DEQ and the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

References Cited

Distract Seven Health Department, 2000. Miller Country Estates Sanitary Survey Report.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works".

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POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

Appendix A
Miller Country Estates
Susceptibility Analyses

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	NORHT: 07/12/1999, SOUTH: 5/28/1998				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
	Total System Construction Score	4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
	Total Hydrologic Score	6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED AGRICULTUE	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A	4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	18	19	19	9
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	8	4	4	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B	16	16	18	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II	5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III	3	3	3	0
Cumulative Potential Contaminant / Land Use Score		28	26	30	14
Weighted Potential Contaminant / Land Use Score		6	5	6	6
4. Final Susceptibility Source Score		16	15	16	16
5. Final Well Ranking		High	High	High	High